REMARKS

Notice to Comply

The undersigned hereby states that the content of the Sequence Listing included as part of the application filed herewith and the attached computer readable copy, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same.

Supplemental Response to Restriction Requirement

Applicants thank the Examiner for the interview of January 14, in which the Examiner agreed to allow Applicants to amend the election.

Applicant originally elected Group II (claims 1, 8-10 and 22-24), and SEQ ID NO:14. Applicants hereby cancel that election.

Applicants now elect Group I, SEQ ID NO:2 and well-conserved, structurally similar, closely related sequences. SEQ ID NO: 2 is DP 107, a peptide of the gp41 glycoprotein of HIV. The claimed sequences are all DP 107 sequences, corresponding to amino acid residues 558-595 of the gp41 glycoprotein of HIV.

SEQ ID NO:147-149 are all carboxy-terminal truncations of SEQ ID NO:2. SEQ ID NO:147 is a single amino acid carboxy-terminal truncation. SEQ ID NO:148 is a two amino acid carboxy-terminal truncation. SEQ ID NO:149 is a three amino acid carboxy-terminal truncation.

SEQ ID NO: 179-181 are all amino-terminal truncations of SEQ ID NO:2. SEQ ID NO:179 is a single amino acid amino-terminal truncation. SEQ ID NO:180 is a two amino acid amino-terminal truncation. SEQ ID NO:181 is a three amino acid amino-terminal truncation.

SEQ ID NO:542-545 are peptides that have one amino acid substitution with respect to SEQID NO:2. The sequences are supported, for example at page 7, lines 23-29 of the Specification as filed.

Applicants expressly reserves their right under 35 U.S.C. § 121 to file a divisional application directed to the nonelected subject matter during the pendency of this application, or an application claiming priority from this application.

Amendments to the Claims

The limitations of claim 2 have been incorporated into claim 1. The limitations of claims 5 and 7 have been incorporated into claim 1 to conform to the restriction requirement. Non-elected claims 8-18 and 22-30 have been cancelled.

Dependent claims 31-58 have been added to more specifically claim aspects of the elected claims. New dependent claims 32-35 are directed to a conjugated peptide comprising the modified anti-viral peptide of claim 1 covalently bonded to a blood component. New dependent claims 36-39 are directed to a composition comprising the modified anti-viral peptide of claim 1. New dependent claims 40-43 are directed to a composition comprising the conjugated peptide of claim 31. New dependent claims 44-51 are directed to methods of treating human immunodeficiency virus (HIV) infection in a patient. Claims 52-58 are directed to specific chemical formulas.

Support for the new dependent claims may be found, for example, at page 1, lines 11-14, page 12, lines 12-15, page 31 lines 8-19, and page 48 of the Specification.

With respect to all amendments and cancelled claims, Applicants have not dedicated or abandoned any unclaimed subject matter and moreover have not acquiesced to any rejections and/or objections made by the Patent Office. Applicants reserve the right to pursue prosecution of any presently excluded claim embodiments in future continuation and/or divisional applications.

Amendments to the Specification

The Specification has been amended to include SEQ ID NO entries for each disclosed sequence. Specifically, replacement pages 4, 5, 23, and 137-170 are submitted.

At page 23, a typographical error has been corrected.

SEQ ID NO:87-533 identify specific sequences disclosed in the specification.

SEQ ID NO: 534-545 are single amino acid mutations of SEQ ID NO:1 and SEQ ID NO:2. While the sequences are not explicitly listed in the Specification, they are supported, for example, at page 7, lines 24-30 of the application as filed.

New Sequence Listing

A new sequence listing is also included with this response. SEQ ID NO:87-533 identify specific sequences disclosed in the specification as filed.

SEQ ID NO: 534-545 are single amino acid mutations of SEQ ID NO:1 and SEQ ID NO:2. While not expressly disclosed in the application as filed, SEQ ID NO: 534-545 are supported, for example, at page 7, lines 24-30.

Applicant requests examination of the elected subject matter on the merits.

Conclusion

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **500862001500**. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: February 19, 2003

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Please substitute the following pages to the Specification: **Replacement pages 4, 5, 23 and 137 - 170.**

human respiratory syncytial virus (RSV), human parainfluenza virus (HPV), measles virus (MeV) and simian immunodeficiency virus (SIV).

BRIEF DESCRIPTION OF THE TABLES

The invention will be better understood by reference to the Tables, in which:

Table 1 lists the commonly occurring amino acids together with their one letter and three letter abbreviations, and common protecting groups.

Table 2 shows DP178 carboxy truncations including SEQ ID NO:1 and 87-116.

Table 3 shows DP178 amino truncations including SEQ ID NO:1 and 117-146.

Table 4 shows DP107 carboxy truncations including SEQ ID NO:2 and 147-178.

Table 5 shows DP107 amino truncations including SEQ ID NO:2 and 179-210.

Table 6 shows HIV-2_{NIHZ} DP178 analog carboxy truncations including SEQ ID NO:7 and 211-240.

Table 7 shows HIV-2_{NIHZ} DP178 analog amino truncations including SEQ ID NO:7 and 241-270.

Table 8 shows RSV F2 region DP107 analog carboxy truncations including SEQ ID NO:13 and 271-312.

Table 9 shows RSV F2 region DP107 analog amino truncations including SEQ ID NO:313-353.

Table 10 shows RSV F1 region DP178 analog carboxy truncations including SEQ ID NO:354-385.

Table 11 shows RSV F1 region DP178 analog amino truncations including SEQ ID NO:386-416.

Table 12 shows HPV3 F1 region DP 178 analog carboxy truncations including SEQ ID NO:417-446.

Table 13 shows HPV3 F1 region DP 178 analog amino truncations including SEQ ID NO:447-475.

Table 14 shows HPV3 F1 region DP107 analog carboxy truncations including SEQ ID NO:476-504.

Table 15 shows HPV3 F1 region DP107 analog amino truncations including SEQ ID NO:505-533.

Table 16 shows representative anti-RSV peptides of SEQ ID NO:15-30.

Table 17 shows representative anti-HPV3 peptides of SEQ ID NO:33-62.

Table 18 shows representative anti-SIV peptides of SEQ ID NO:64-73.

Table 19 shows representative anti-MeV peptides of SEQ ID NO:76-86.

BRIEF DESCRIPTION OF SEQUENCE LISTING

The invention will be better understood by reference to the Sequence Listing, in which:

SEQ ID NO:1 shows the peptide sequence of DP178~~.~~;

SEQ ID NO:2 shows the peptide sequence of DP107;

SEQ ID NO:3-~~9~~7 show peptide sequences of certain DP178 analogs~~.~~;

SEQ ID NO:8-9 show peptide sequences of certain DP107 analogs;

SEQ ID NO:10-30 show the peptide sequences of RSV F1 region and F2 region corresponding to DP178 and DP107, and representtive anti-RSV peptides;

SEQ ID NO:31-62 show the peptide sequences of HPIV3 F1 region corresponding to DP178 and DP107, and representative anti-HPIV3 peptides;

SEQ ID NO:63-73 show peptide sequences of SIV corresponding to DP178 and representative anti-SIV peptides; ~~and~~

SEQ ID NO:74-~~78~~86 show peptide sequences of MeV corresponding to DP178 and representative anti-MeV peptides~~.~~;

SEQ ID NO:87-116 show peptide sequences of DP178 carboxy truncations;

SEQ ID NO:117-146 show peptide sequences of DP178 amino truncations;

SEQ ID NO:147-178 show peptide sequences of DP107 carboxy truncations;

SEQ ID NO:179-210 show peptide sequences of DP107 amino truncations;

SEQ ID NO:211-240 show peptide sequences of HIV-2_{NIHZ} DP178 analog carboxy truncations;

SEQ ID NO:241-270 show peptide sequences of HIV-2_{NIHZ} DP178 analog amino truncations;

SEQ ID NO:271-312 show peptide sequences of RSV F2 region DP107 analog carboxy truncations;

SEQ ID NO:313-353 show peptide sequences of RSV F2 region DP107 analog amino truncations;

SEQ ID NO:354-385 show peptide sequences of RSV F1 region DP178 analog carboxy truncations;

SEQ ID NO:386-416 show peptide sequences of RSV F1 region DP178 analog amino truncations;

SEQ ID NO:417-446 show peptide sequences of HPV3 F1 region DP 178 analog carboxy truncations;

SEQ ID NO:447-475 show peptide sequences of HPV3 F1 region DP 178 analog amino truncations;

SEQ ID NO:476-504 show peptide sequences of HPV3 F1 region DP107 analog carboxy truncations;

SEQ ID NO:505-533 show peptide sequences of HPV3 F1 region DP107 analog amino truncations;

SEQ ID NO:534-541 show peptide sequences of DP178 with deletion and insertion of an amino acid; and

SEQ ID NO:542-545 show peptide sequences of DP107 with deletion and insertion of an amino acid.

DETAILED DESCRIPTION OF THE INVENTION

To ensure a complete understanding of the invention the following definitions are provided:

Anti-viral peptides: As used herein, anti-viral peptides shall refer to peptides that inhibit viral infection of cells, by, for example, inhibiting cell-cell fusion or free virus infection. The route of infection may involve membrane fusion, as occurs in the case of enveloped viruses, or some other fusion event involving viral and cellular structures. Peptides that inhibit viral infection by a particular virus may be referenced with respect to that particular virus, e.g., anti-HIV peptide, anti-RSV peptide, etc.

Antifusogenic peptides: Antifusogenic peptides are peptides demonstrating an ability to inhibit or reduce the level of membrane fusion events between two or more entities, e.g., virus-cell or cell-cell, relative to the level of membrane fusion that occurs in the absence of the peptide.

ID NO:52 and SEQ ID NO:58 each have amino acid sequences contained within the peptide of SEQ ID NO:~~30~~31 and each has been shown to exhibit anti-HPIV-3 activity, in particular, inhibiting fusion and syncytia formation between HPIV-3-infected Hep2 cells and uninfected CV-1W cells at concentrations of less than 1 μg/ml.

The peptide of SEQ ID NO:32 is also derived from the F1 region of HPIV-3 and was identified in U.S. Patent Nos. 6,103,236 and 6,020,459 using the search motifs described as corresponding to DP178 (i.e., "DP178-like"). The peptides of SEQ ID NO:35 and SEQ ID NO:38 to SEQ ID NO:42 each have amino acid sequences contained within the peptide of SEQ ID NO:32 and each also has been shown to exhibit anti-HPIV-3 activity, in particular, inhibiting fusion and syncytia formation between HPIV-3-infected Hep2 cells and uninfected CV-1W cells at concentrations of less than 1 μg/ml.

C. Anti-MeV Peptides

Anti-MeV peptides are DP178 and/or DP107 analogs identified from corresponding peptide sequences in measles virus (MeV) which have further been identified to inhibit viral infection by the measles virus. Such peptides of particular interest include the peptides of Table 19 and peptides of SEQ ID NO:74 to SEQ ID NO:86. Of particular interest are the peptides listed below.

HRIDLGPPISLERLDVGTNLGNAIAKLEAKELLE (SEQ ID NO:77)
IDLGPPISLERLDVGTNLGNAIAKLEAKELLESS (SEQ ID NO:79)
LGPPISLERLDVGTNLGNAIAKLEAKELLESSDQ (SEQ ID NO:81)
PISLERLDVGTNLGNAIAKLEAKELLESSDQILR (SEQ ID NO:84)

Sequences derived from measles virus were identified in U.S. Patent Nos. 6,103,236 and 6,020,459 using the search motifs described as corresponding to

SEQ ID NO:147-178 show peptide sequences of DP107 carboxy truncations;

SEQ ID NO:179-210 show peptide sequences of DP107 amino truncations;

SEQ ID NO:211-240 show peptide sequences of HIV-2_{NIHZ} DP178 analog carboxy truncations;

SEQ ID NO:241-270 show peptide sequences of HIV-2_{NIHZ} DP178 analog amino truncations;

SEQ ID NO:271-312 show peptide sequences of RSV F2 region DP107 analog carboxy truncations;

SEQ ID NO:313-353 show peptide sequences of RSV F2 region DP107 analog amino truncations;

SEQ ID NO:354-385 show peptide sequences of RSV F1 region DP178 analog carboxy truncations;

SEQ ID NO:386-416 show peptide sequences of RSV F1 region DP178 analog amino truncations;

SEQ ID NO:417-446 show peptide sequences of HPV3 F1 region DP 178 analog carboxy truncations;

SEQ ID NO:447-475 show peptide sequences of HPV3 F1 region DP 178 analog amino truncations;

SEQ ID NO:476-504 show peptide sequences of HPV3 F1 region DP107 analog carboxy truncations;

SEQ ID NO:505-533 show peptide sequences of HPV3 F1 region DP107 analog amino truncations;

SEQ ID NO:534-541 show peptide sequences of DP178 with deletion and insertion of an amino acid; and

SEQ ID NO:542-545 show peptide sequences of DP107 with deletion and insertion of an amino acid.

DETAILED DESCRIPTION OF THE INVENTION

To ensure a complete understanding of the invention the following definitions are provided:

Anti-viral peptides: As used herein, anti-viral peptides shall refer to peptides that inhibit viral infection of cells, by, for example, inhibiting cell-cell fusion or free virus infection. The route of infection may involve membrane fusion, as occurs in the case of enveloped viruses, or some other fusion event involving viral and cellular structures. Peptides that inhibit viral infection by a particular virus may be referenced with respect to that particular virus, e.g., anti-HIV peptide, anti-RSV peptide, etc.

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Antifusogenic peptides: Antifusogenic peptides are peptides demonstrating an ability to inhibit or reduce the level of membrane fusion events between two or more entities, e.g., virus-cell or cell-cell, relative to the level of membrane fusion that occurs in the absence of the peptide.